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The Utilization of the Forces of the Navy in a Missile/Nuclear War

by

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Each type of armed forces has its strong and weak aspects. By combining the strong sides of the different types of armed forces, combat missions can be accomplished in the most effective way under various conditions. There cannot be an absolute weapon, capable of accomplishing every mission in the most effective way under all possible conditions. For this reason the different types of our armed forces are developed according to their combat characteristics and capacity to accomplish the main missions in a war in a concrete historical situation.

One of the main strategic missions in contemporary warfare is the disorganization of the enemy's economy. It is accomplished mainly by missile troops of strategic designation who can take action successfully against stationary economic targets, most of which are known in advance. However, besides the latter, there are also mobile economic objectives, in particular transport ships. It is known that the aggressive capitalist countries have at their disposal about 80 million registered tons of dry cargo-carrying tonnage and more than 20 million registered tons of tankers. It can be surmised, naturally, that the probable enemy, preparing to launch a missile/nuclear war, could have all this tonnage fully loaded in advance and under way at sea or dispersed far away from large economic centers. The economic supplies on these mobile objectives are very considerable and could have a big influence on the course of armed combat, especially in its initial period. Missile troops of strategic designation cannot yet strike at such mobile objectives effectively. This is a mission for aviation and the Navy.

Another most important mission facing the armed forces - the destruction of the enemy's means of nuclear attack - is even more complicated as, besides the fact that most of these means will be dispersed, under cover and camouflaged, a considerable part of them will prove to be, at the beginning of a war, not on land, but on the seas and oceans carried on mobile means - aircraft carriers, missile carriers, submarines and in maneuvering supply detachments (manevrennyy otryad snabzheniya).

If one calculates, on the basis of the norms adopted in the United States Navy for supplying vessles with nuclear weapons, intended for operations against shore and sea objectives, then it will turn out that not less than 5 or 6 percent of all available nuclear warheads will be concentrated on vessels. In the seagoing supply bases there will also be not less than one complete unit of fire, so that altogether at the beginning of a war, vessels and supply ships may be carrying up to 10 to 12 percent of all the probable enemy's available nuclear warheads, which cannot be attacked by surface-to-surface (nazemnyy) ballistic missiles, but must be destroyed by the forces of the Navy. Thus, a considerable part of the second basic mission - destruction of the enemy's mobile nuclear means of attack - must also be accomplished by the Navy in cooperation with aviation.

In comparison with other types of armed forces, the Navy has very important combat characteristics and possibilities peculiar to itself. These possibilities are considerably enhanced by the introduction of missile/nuclear weapons and atomic power plants in vessels.

In conditions of a sudden outbreak of a missile/nuclear war, the Navy has greater combat stability than the other types of armed forces, owing to the possibility of being at dispersed bases on a long stretch of coastline, and also of being able to put to sea in advance. Dispersed naval forces will not present an attractive target to an enemy for strikes by the

enemy's multi-megaton nuclear charges (zaryad), the use of which is most likely at the beginning of a war, at the time when the large units of other types of armed forces, though dispersed over large areas, can be subjected to great destruction as a result of such strikes.

If the problem of withdrawing these or other forces from the enemy's first missile/nuclear strikes has not been solved successfully, their employment in the war is very problematical. The possible dispersion of and partial cover for such forces will not enable them to avoid losses, and consequently, to retain their full combat effectiveness. Even the most mobile type of armed forces - aviation, which, under certain conditions can be withdrawn directly from a strike, will, if deprived of airfields, lose its combat effectiveness to a considerable extent. On the other hand, naval forces deployed at sea, with their main arm - submarines, cruising submerged, can be withdrawn most successfully from a strike, and can, therefore, be used with full combat effectiveness during the first strikes at the enemy.

The most important quality, peculiar to the Navy, is its ability to deliver powerful strikes at moving objectives at sea. The forces of the Navy, armed with modern missile/nuclear weapons, possess a high degree of operational-combat capacity. Thus, the operational-strategic exercise conducted by the Commander-in-Chief of the Navy in August 1960 showed that even one submarine with an atomic power plant can make repeated attacks on a carrier strike large unit at sea and destroy one or two large vessels. A brigade of such submarines can successfully accomplish the mission of destroying a carrier strike large unit consisting of several aircraft carriers and operating in a definite direction occupying, along the front /two or three words missing/. The destruction of a carrier strike large unit carrying 100-120 nuclear warheads means that the enemy is deprived of these nuclear warheads for use against our installations.

If one considers the possibility of repeated employment of the carrier strike large units, then their destruction will save us from many hundreds and even thousands of nuclear strikes.

In the near future the United States will have up to 40 atomic submarines, armed with 16, and possibly more, "Polaris" type ballistic missiles with nuclear warheads. In the course of one cruise these submarines will be able to use up to 640 and more nuclear warheads against our installations, and if resupplied twice at sea - up to 2,000 nuclear warheads. It is mainly the Navy that can conduct combat against such submarines.

The arming of our submarines with ballistic missiles with nuclear warheads makes them a very effective weapons in the accomplishment of the mission of disorganizing the enemy's economy and destroying his means of nuclear attack. It is true that in some respects submarines armed with ballistic missiles are inferior to surface-to-surface ballistic missile installations (lower accuracy of fire, reduced readiness in view of the necessity to deploy and take up firing positions, etc.), but they also have important advantages.

While surface-to-surface missile installations cannot fire a significant number of salvos in present-day conditions from the same position without suffering retaliatory action, a submarine, especially in launching missiles when submerged, can successfully make use of its whole unit of fire of missiles from one position, remaining under way all the time.

Possessing high maneuverability and concealment, a missile-carrying submarine will, in the initial period of war, prove to be the least vulnerable and most stable combat means, capable of delivering sudden and powerful nuclear strikes in important directions.

In modern conditions all ground means are vulnerable to effective action from enemy nuclear weapons. Moreover, if they are not destroyed, they will be in the zone of radioactive contamination, which will reduce considerably their combat effectiveness. On the other hand, a missile-carrying submarine, being under water, is not vulnerable to radioactive contamination, and can always bypass dangerous zones.

Missile-carrying submarines, being least vulnerable to a sudden missile/nuclear attack by the enemy, can become a special weapon in the hands of the Supreme High Command. It is not mandatory to use them immediately on the outbreak of a war; they can be held in reserve for accomplishing missions directed toward the successful completion of the initial period of war. With the possibility of resupplying missile-carrying submarines at sea, use can be made of them repeatedly (both at the very beginning of a war, as well as during its initial period and subsequently).

Thus, the Navy possesses important operational-combat capabilities and advantageously complements the missile troops of strategic designation in the accomplishment of the most important strategic missions with which the armed forces are faced. However, the methods of using these capabilities of the Navy and the methods of conducting naval operations require, in our opinion, further serious elaboration.

Even during the most important exercises and games, we have hitherto, in essence, considered the operations of the Navy only at the very outbreak of a war, and not during the whole of its initial period, which has afforded possibility for studying only questions connected with delivering the first strike. It is essential to work out the complete accomplishment of the basic missions during the initial period of a war, and foremost in the theoretical field.

Let us examine, briefly, the main missions of the Navy, the possible conditions, and the methods for their accomplishment.

The destruction of the strike forces of the enemy's Navy, including strike aircraft carriers, missile-carrying vessels, and, in the near future, atomic submarine missile carriers, is one of the priority tasks of the Navy.

At the beginning of a war the probable enemy is able to deploy up to seven carrier strike large units (AUS), each consisting on the average of three aircraft carriers, three cruisers armed with missiles, and 12 to 18 destroyers, armed partly with antiaircraft missiles. It is most probable that these carrier strike large units will be distributed in theaters in the following way: North Atlantic - 3, Pacific Ocean - 2, Mediterranean Sea and Indian Ocean - 1 each.

Combat with carrier strike large units must be conducted in three directions; destruction of the AUS themselves, destruction of their mobile supply detachments at sea, and destruction of the naval bases at which they are based.

The destruction of the AUS at sea (in the ocean) must be the main mission of submarines, missile aviation, of the Navy and long-range aviation. The destruction of mobile supply detachments at sea, insofar as they are beyond the range of aircraft, will be the mission of submarines. Finally, the destruction of the bases of carrier strike large units (including the shore bases of carrier aircraft) must be accomplished by missile troops of strategic designation. The use of missile-carrying submarines for the latter mission is also not excluded.

Taking into account the striving of the probable enemy to unleash a war suddenly, it may be expected that at its outbreak all strike aircraft carrier and missile-carrier large units will not be at bases, but at sea, at the takeoff lines of deck-based aircraft for strikes. So long as the AUS remain beyond these lines before the beginning of military operations, there would in most cases be no grounds for action against

them before they approach these lines. Consequently, our forces should be deployed on the probable lines where the enemy's deckbased aircraft will take off. Here, too, should be concentrated the main efforts of atomic and diesel-battery submarines and missile aircraft using nuclear weapons, for the most part.

The complications involved in deploying forces when repelling a sudden nuclear strike by the enemy at the outbreak of a war, and the striving to employ strike aircraft carriers in accordance with the principle of swift approach, strike, and rapid withdrawal, cannot always create conditions for the complete destruction of carrier strike large units with the first strike, which will require continuation of operations until the mission is fully completed. In such circumstances, missile aircraft, after reloading, prepare for a repeated strike at the AUS when the latter makes a new attempt to approach the line for launching deckbased aircrat, while atomic submarines pursue the enemy and inflict repeated blows on him. An especially advantageous time for such strikes will be the period when the vessels are being resupplied and refueled by the mobile supply detachments, which must also be objectives for strikes by atomic submarines.

At the beginning of combat operations, diesel-battery submarines, disregarding the lines of takeoff for deckbased aircraft, should move farther ahead with a view to inflicting preventive strikes on aircraft carriers before the carriers repeat their approach to the line of takeoff for deckbased aircraft. Naturally, after the beginning of combat operations, the lines where the main efforts are to be concentrated should be selected with a view to delivering strikes on the AUS before they approach to within range of deckbased aircraft. Atomic submarines, making use of their great maneuverability, can deliver strikes on AUS in the ocean wherever they overtake them.

Such can be the general scheme for the complete accomplishment of the mission of destroying each AUS.

Combat with missile-carrying submarines which, on the outbreak of war, will also be deployed in lines from which missiles can be launched, should take form from operations for the destruction of the submarines themselves, their shore bases, and their mobile supply bases at sea.

The most probable areas of deployment of missile-carrying submarines will be the Northern Arctic Zone and the Norwegian Sea, which open up the shortest route to targets which are in the depth of our country, and are for that reason least accessible to the enemy's main carrier of nuclear weapons - aircraft (hence the most important strategic significance of combat with missile-carrying submarines, especially in the Northern Arctic Zone). This is fully confirmed by a study of the operations of United States atomic submarines mainly in the Northern Arctic Zone. At the same time, the possibility of operations by missile-carrying submarines from other important directions is not excluded.

According to the system adopted in the United States for the distribution of targets among the different types of armed forces, targets for the Navy are situated at a depth of up to 1,000 kms from the coast. Taking the maximum range of fire of submarines with ballistic missiles of the "Polaris" type as 2,800 kms, the main efforts against submarines in the initial period of a war must be concentrated on the lines from which they would launch their missiles, i.e., at a distance of 1,800 kms and more (1,000 miles) from the coast.

The main forces that will be involved in accomplishing the mission of destroying submarines in distant areas will be submarines, antisubmarine aircraft, and antisubmarine vessels. As positional means of detecting and destroying submarines cannot be set up in peacetime in neutral waters, reliance should not be placed on their wide use in the initial period of a war.

Maneuvering antisubmarine forces could be concentrated without hindrance before the beginning of combat operations on the lines of operations of missile-carrying submarines, and after detecting the submarines they could maintain hydroacoustic contact with them until an order for using weapons is received or until they make their first attempt to launch missiles.

Accomplishing the mission of detecting submarines in the extensive areas of seas and oceans demands an excessively large expenditure of existing forces and weapons, which calls for the creation of new means permitting the surveillance of extensive water areas in short periods of time. In this respect, the greatest capabilities are possessed by long-range seaplanes making use of small sonar buoys, and also by antisubmarine vessels carrying antisubmarine helicopters. Armed with antiaircraft missiles, surface antisubmarine vessels could considerably extend their zone of operations.

Combat against missile-carrying submarines can be conducted most successfully by antisubmarine submarines in all conditions, especially in areas of pack and drifting ice. In areas of clear water and broken ice, use can be made to some extent of antisubmarine aircraft and helicopters. An automated system of lines of radio-hydroacoustic stations and cable-hydrophone lines set up on the ice can significantly facilitate the detection of submarines in conditions of ice.

The destruction in the ocean of mobile supply bases for missile-carrying submarines should be carried out by our submarines operating against the mobile supply detachments of carrier strike large units or by specially allocated submarines, if the areas of operations of the missile-carrying submarines and the AUS of the enemy do not coincide.

The destruction of the stationary bases of submarines, as well as of the bases of carrier strike large units, must be accomplished by the missile troops of strategic designation.

Submarines have now become the principal striking force at sea. In accordance with this, combat against them must inevitably change from being a type of defense to the basic offensive mission of the Navy in destroying the enemy's forces at sea. Combat at sea is going under water. Forces operating against submarines will eventually become the basic strike forces of the Navy.

The existing antisubmarine forces and weapons of the Navy, with the exception of submarines, can in fact carry on combat with enemy submarines only in the coastal zone. This is far from adequate. Anti-submarine forces, as the basic means of combat against the future main strike forces of the enemy Navy, have a great future, and special attention must be paid to their development.

Combat against missile-carrying submarines presents a new problem. Ways of solving it are still under investigation. It is possible that in the future they will turn to some extent into combat between "two of a kind" (between submarines) under water.

The probable enemy, intending to carry on an aggressive war against the countries of the Socialist Camp across the ocean and not relying on holding the bridgeheads now occupied by him on the Eurasian continent, will inevitably attempt to make major landings in order to seize new bridgeheads or to reestablish the situation on them, and also to undertake sea shipping in order to supply the groupings established in these areas. In this connection the question arises: where, how. and with what forces can combat with landing forces(and also with convoys on communication lines) of the enemy be conducted most effectively?

The view is expressed that: "Enemy landing operations, while enroute at sea, do not merit expensive and cumbersome operations against them by the Navy and long-range aviation. The basis of their annihilation can be by missile strikes

in embarkation and debarkation areas; while enroute at sea, it is again more expedient to annihilate landing forces by strikes with missiles having nuclear charges of several megatons".[1]

There are, of course, many ways in which any mission can be accomplished. In selecting them, the aim should be to accomplish each mission as quickly as possible, using the minimum forces and suffering the smallest losses. In a more detailed examination of the questions of combat against enemy landing forces, we come up against the following circumstances which militate against accomplishing the mission in the way outlined above.

A landing force at embarkation ports cannot as yet be an objective for missiles with nuclear and, even less, with conventional warheads. As experience in the Second World War has shown, landing detachments are formed at many ports which are not even situated on the same continents (Sicilian and Normandy landing operations, landings in northwest Africa, etc.). At present the enemy is working toward a system of operational and combat training of embarking landing troops where there are no ports, and he is building ships adapted for this. Consequently, the embarkation of a landing force will most probably take place on a very wide front on an undeveloped coast. The simplest calculations show that an enormous expenditure of ballistic missiles will be required to achieve even some effect in strikes against a landing force while it is boarding its ships.

It is most probable that a large enemy landing force will proceed in the form of many small detachments from various directions in dispersed combat formations and orders. Therefore, one can hardly consider that a landing force at sea will present a suitable target for missiles with nuclear warheads of several megatons.

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1. "The Theory of Military Art Needs Review", by Colonel-General A. Gastilovich, Special Collection of Articles of the Journal "Military Thought", First Issue, 1960, page 12

To deliberately rely in all cases on destroying enemy landing forces on our coast after their disembarkation or while they are disembarking, would mean to make it possible for the enemy to accomplish the preliminary mission of his operation unhindered and to put our defense in a very unfavorable situation. Landings have always been made, and apparently will be made, when there is great superiority in forces over the defenders. It must be surmised that in the first place the enemy will aim at ensuring his superiority in nuclear weapons in the landing area. Moreover, a landing will be preceded by a preliminary and direct neutralization in the full depth of our defensive forces. It is, therefore, in our view, manifestly disadvantageous to deliberately postpone combat with the landing forces until this period.

Moreover, another fundamentally important circumstance is involved. Would it be right to transfer the zone of nuclear combat to our territory? We believe not. The course of turning one's own territory into a desolate wilderness can obviously be followed only in certain directions, and then only in the most exceptional cases.

Consequently, it is clearly inexpedient and dangerous to accept the scheme outlined above for our operations in combat with enemy landing forces.

An entirely different situation is created when the Navy operates against the landing force at sea.

Calculations and experience during combat training of recent years show that even one atomic submarine armed with torpedoes can destroy more than 20 ships with troops and supplies (approximately one division of the landing force). One atomic submarine is also capable of destroying one or two large surface vessels of the screening forces, including strike carriers, which carry 60 to 100 nuclear warheads. Is this "expensive" compared with the price we shall pay if the enemy uses the indicated nuclear power against objectives

on our territory, and after that makes a landing? Other calculations could also be put forward to show that destruction of the enemy forces at sea will always be cheaper and more simple than combat with him when he is already on our territory.

Thus, until missiles attain the capability of destroying mobile sea targets at long ranges, there are no reasons for abandoning action against a landing force at sea, and even less for transferring nuclear combat with it to our territory.

Figures were given above regarding dry cargo-carrying and tanker tonnage which could be loaded by the beginning of a war. If stocks of strategic raw materials are laid down in advance, this transport fleet can be used in the first instance for shipping having military significance. It is known that up to three-quarters of the probable enemy's resources in materiel and personnel are across the ocean. Calculations show that 80 to 100 transports must arrive daily in European ports alone. If one estimates ten days for crossing the North Atlantic and returning in ballast, it can be surmised that on this communication line, 1,500 to 2,000 ships, excluding escort vessels, will be at sea at the same time.

By stopping, holding up, or reducing to the minimum this flow of troops and supplies to the main theater of war, even for a short time, especially during decisive periods of combat, we would put the enemy into a difficult situation and create the most favorable conditions for our own armed forces. This determines the strategic significance of the mission of destroying the enemy's sea communication lines. For the accomplishment of this task the Navy has far greater operational-combat capabilities in comparison with other types of armed forces.

Study of the experience of the operational training of NATO navies, as well as elementary calculations, show that the problem of giving security to such strained

communication lines cannot be fully solved by the probable enemy, owing both to the shortage of existing forces and means as well as to the impossibility of replenishing and restoring them under conditions of the disorganization of the shipbuilding industry.

It is known that besides the system of ordinary convoys, the probable enemy is looking for new ways of accomplishing the mission of protecting communication lines. Thus, he has studied the question of "monster-convoys", which permit a lesser ratio between the screening forces and the escorted transports. It is possible to accomplish the mission of securing the most crowded communication lines by the method of "patrolled zones", with ships moving in them without escorts, which provides not only economy of escort forces but, what is especially important, a quicker turnaround on the part of the transports. This method springs directly from the zonal system of defense in sea theaters adopted by NATO. Single use (without escort) may also be made of fast liners on communication lines, mainly for the transportation of troops (some of them can carry up to 6 to 8 thousand persons), wounded, radio-electronic, medical, and other equipment and other materiel in short supply.

The striving for more reliable security of sea transport can be seen from the proposed new line of development in the building of transports by the main capitalist countries. It finds its expression in the building of container (konteynernoye) and trailer (traylernoye) ships which can be unloaded and loaded quickly, in the building of ships with their own means of loading and unloading [two or three words missing] capability of loading and unloading without tying up, and with a considerable increase of the speeds of all transport vessels. The use of submarine transport vessels, especially tankers with atomic propulsion, is contemplated in the future. As in the past, great attention is given to the development of transport-landing and debarking means.

The probable enemy's great dependence on sea and ocean communication lines and the impossibility of securing them reliably during a war give rise not only to the necessity of taking action against his sea and ocean communication lines, but also create favorable conditions for the accomplishment of this mission by the forces of the Navy.

The disruption of sea and ocean communication lines cannot, in our view, be an urgent task immediately on the outbreak of a war, for the enemy apparently counts on ensuring accomplishment of the missions of the initial stage of a war by laying in supplies in advance at the planned bridgeheads. Some time is also required for the organization of communication lines. The forming of convoys and their movement from ports in the United States to Western-European ports will take two to three weeks. There is information that the Anglo-American command is going into the question of sending "monster-convoys" from ports on the eastern coast of the United States to Western-European ports one month after the beginning of a war. It is most probable that the enemy will be faced with the problem of securing communication lines in their entirety during the concluding period of the combat for attaining the objectives of the initial stage of the war, in particular for restoring the situation in important areas, for establishing new bridgeheads, and supplying the appropriate groupings of armed forces there.

In order to fulfil the task of disrupting the enemy's sea and ocean communication lines, it will be necessary to redeploy our submarines, which raises the most important problem of resupplying submarines in the ocean, as one cannot count on doing this at shore bases which have been subjected to destruction, not to mention the fact that there will be no time for this.

In previous wars, operations on communication lines continued throughout the whole war. The ports where loading and unloading took place were not subjected to significant destruction; the shipbuilding industry succeeded not only in restoring the losses of tonnage, but in increasing it, while the use of conventional weapons against ships at sea did not give decisive results either in economic or military respects.

Present-day conditions have created opportunities for achieving decisive results in combat on communication lines. Any ports where loading and unloading take place, and communication line centers on land, can now be subjected to destruction by missile/nuclear weapons which will often produce far greater results than those attained by the protracted combat on communication lines in previous wars. For instance, the putting-out of action of the Panama Canal would lengthen the sea route from eastern United States ports to western ports from five thousand to thirteen thousand miles, or, in other words, would at once reduce transport possibilities on this communication line threefold. The putting-out of operation of the Suez Canal during the attempted armed intervention in Egypt by the British and French, even for a comparatively short period of time, when oil from the Near East had to be transported partly around Africa, forced the West European countries to ration fuel.

Under conditions of missile/nuclear war, the shipbuilding industry will be the focus of intensive activities. Being based on extensive cooperation among many branches of industry, it is particularly vulnerable to disorganization. Consequently, there can be no question of restoring tonnage on a large scale during a war. At the same time, the operational-combat capabilities of the forces of the Navy, and especially of submarines, in disrupting sea and ocean communication lines, have, as we have already pointed out, increased considerably. All this points to the fact that effective results in the accomplishment of this mission can now be attained more quickly than before.

Operations for the disruption of sea and ocean communication lines should, under modern conditions, be built, not on the principle of protracted, so-called "systematic operations" with a constant exertion of forces, as was the case heretofore, but on the principle of maximum concentration of forces on decisive axes in a limited time. An interruption in communication lines, even for a month, where the enemy has large-scale personnel and materiel losses in the main theaters of the war, will create favorable conditions for the successful execution of combat by our armed forces on the major axes.

The effective accomplishment by the Navy of the basic tasks examined above demands the carrying out of appropriate measures both in the makeup of the Navy and in the organization of its comprehensive support. What are these measures?

1. In the first place, the forces which will take part in accomplishing the main tasks in a war should be developed in every possible way:

- atomic submarines, armed with missile/nuclear weapons and long-range torpedoes;

- naval strike missile aircraft, not wheeled aircraft which are entirely dependent on airfields, but seaplanes;

- long-range antisubmarine strike forces - submarines, seaplanes, helicopters, and antisubmarine surface vessels.

Increasing autonomy, units of fire of weapons, and radius of operation, must be the main requirement in the development of these forces.

2. Insofar as the operations of our forces, especially of submarines far away from their bases, involve their return to base after using up their units of fire, which leads to a great reduction in their coefficient of combat utilization, the main problem for ensuring that the forces can operate effectively is in supplying them with

missile/nuclear weapons and torpedoes and in resupplying them at sea with material-technical resources.

It would be most expedient to follow the course of creating transport seaplanes capable of operating from bases located on internal waterways in the depth of the country and of delivering the necessary types of ammunition and supplies quickly to any areas of the ocean. The accomplishment of this mission will be made much easier if efforts are made at the same time to reduce the dimensions and weight of missile/nuclear weapons, which would considerably simplify resupply work at sea.

The first reloading of submarines at sea in the initial period of a war could be carried out to some extent by using modified transports and merchant ships sent in advance to designated areas of the ocean which are poorly watched.

We should also follow the course of creating secret depots, especially under water, in specially selected areas situated close to the areas of combat operations of our submarines.

The question of creating new, or reconstructing existing, diesel-battery submarines for service as supply bases also merits attention.

The creation of special floating supply bases, especially for missile/nuclear weapons and torpedoes, which have maneuverability and are less vulnerable than depots located on land, is absolutely essential for supplying our forces away from permanent naval bases which could be subjected to destruction at the very beginning of a war.

3. In view of the vulnerability of the main economic installations and naval bases to missile/nuclear strikes from the very beginning of a war, one cannot count on being able to carry out regular and lengthy repairs to the forces of the Navy. Only the unit method (agregatnyy metod) of repair (replacement of entire mechanisms, assemblies, subassemblies-mekhanizm, uzel, blok) can solve this problem. Repairs by the unit method can be carried out by the crew itself in any conditions, including at

sea, provided that the appropriate units are delivered there.

It is the task of industry, and not of shipbuilding yards and naval workshops, to support the unit method of carrying out repairs, i.e., to create a working stock (oborotnyy fond) of mechanisms and assemblies in advance.

We have lagged behind in methods of repairing vessels, and if these archaic methods are also followed in wartime then it is doubtful if any of our vessels will be able to put to sea again once their technical norms of maintenance of mechanisms and weapons have run out or they have been damaged in combat.

It is mainly the working stock of units that calls for repairs, and not the vessels themselves. It is necessary to provide the vessels only with the necessary assemblies for replacement. In a future war, a vessel under repair at a base is a casualty vessel.

4. In view of the possibility of destroying basic economic installations at the beginning of a war, one cannot count on being able to produce means of combat on large scales during the course of the war. This applies particularly to the Navy, as the production of its forces and weapons during hostilities is most complicated. In comparison with other types of armed forces, in the construction of submarines and surface vessels we observe the most extensive collaboration between the many branches of industry, and parallel with this, small-series production. The production of each vessel takes very much longer than the production of an airplane, missile, tank, or other types of weapons.

Consequently, for the Navy, the problem of creating and maintaining at a high state of readiness both the forces themselves and all types of supplies arises in an especially acute form. Under present-day conditions it would be rash and dangerous to rely on "ambling along" ("raskachka"), on accumulating reserves in the course of the war and making use of them during pauses of some sort.

The preparation of forces and accumulation of supplies

in advance will permit a successful solution to the problem, both in the case of a long, as well as of a comparatively short, war. The necessity of accomplishing the main tasks in a war in the shortest possible time must be one of the most important starting points in the reexamination of the operational art of the Navy (and, incidentally, as is obvious, of all the other types of armed forces).